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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/401,660	09/23/1999	MASAAKI NAKABAYASHI	684.2902	4966

5514 7590 04/28/2003

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30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/401,660

Applicant(s)

NAKABAYASHI ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Remark*

- This Office Action is in response to the response/request for reconsideration filed by the applicant on February 10, 2003, which has been entered as paper number 23.
- The applicant has filed no amendments to the claims.
- Claims 1-14 remain pending in this application.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Harris (PN. 5,496,616) in view of the patent issued to Harris et al (PN. 5,208,700).**

**Harris ('616)** teaches a *diffractive optical element* that is comprised of a *diffraction grating portion* having a *first binary diffractive optical element* (10, Figure 1) having grating structure formed on a *first substrate* (14) and a *second corrector binary diffractive optical element* (24) having grating structure formed on a *second substrate* (28). **Harris ('616)** teaches that the first and second binary diffractive optical elements are accumulated with an *air space therebetween*, (please see Figure 1 and column 5). **Harris ('616)** also teaches that the first and second substrates can be made of *different* optically transmissive materials, (please see column 9 lines 36-38). Although this reference does not teach explicitly that the largest optical path length difference to be applied to the light passing through the

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two diffractive elements is of integer multiple of the wavelength of the light, such feature is either inherently met or an obvious modification to one skilled in the art since such condition is the condition for the optical path length difference to induce no phase difference to the light and to provide maximum diffraction efficiency. A skilled worker in the art would be motivated to make the diffractive optical element satisfies this condition for achieving maximum diffraction efficiency. It is implicitly true that the maximum diffraction efficiency will occur for plurality of wavelengths in the vicinity of the design wavelength, (i.e. the wavelength used to design the grating specifics).

Harris ('616) further teaches that alignment markings could be produced at predetermined location on both of the substrates to align the two binary diffractive elements, (please see column 8, lines 16-20). It is either implicitly true that the alignment markings on the two substrates are *engaged* to each other to assure the alignment or it is an obvious modification to one skilled in the art to make the alignment markings engaged to each other in accordance with the teachings of Harris et al ('700) wherein the alignment markings are formed on the surface of the substrate for a grating lens (14) and on the surface of the substrate for a lens cover (16) such that the *corresponding recess* of the alignment markings are *engaged* and aligned in order to make the grating lens in good alignment with the lens cover, (please see column 3 lines 65 to column 4 lines 5). Such modification gives the benefit of providing actual engaging recess as the alignment markings as a way of forming the alignment markings.

With regard to claim 5, although these references do not teach explicitly that the grating structures are opposed to each other however this modification is considered to be an obvious matter of design choice to one skilled in the art for the purpose of obtain a diffractive optical element with desired characteristics.

With regard to claims 6-8 although these references do not teach explicitly that the alignment markings are of the cited geometric shapes. However such modification is considered to be obvious

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matter of design choices to one having ordinary skill in the art since as long as the alignment markings are capable of engaging to each other to assure the alignment the shapes have no criticality.

With regard to claims 10-11, Harris ('616) teaches that molding process may be used to form the two binary diffractive optical elements, (please see column 9, lines 39-67). Harris ('616) teaches that the diffractive optical element may be formed by pressing a mold having negative of the diffractive optical element pattern into a flat soft coating, (please see column 9). Although Harris ('616) teaches explicitly that the alignment marks are made by photolithographic process, but this reference also teaches that other conventional means may be used to make the alignment markings, (please see column 8, lines 19-20). It would therefore have been obvious modification to one skilled in the art to make the alignment markings also with the molding process since both lithographic process and molding process are conventional process for making grooves, marks or grating on a recording medium and it would be more economical to make both the diffractive optical element and the alignment markings in the same molding process. Furthermore, it would also have been an obvious modification to one skilled in the art to make the alignment markings fitted to each other during the molding process for the benefit of achieving good alignment during the molding process.

With regard to claims 13 and 14, the diffractive binary optical elements taught by Harris ('616 and '700) are optical elements that applicable in optical system.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the

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conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending *Application No. 09/871,630*.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite a diffractive optical element having two layers of diffraction gratings and alignment markings on each of the layers to align the two gratings.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 1-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 13-15 of copending *Application No.*

*09/411,632*. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite a diffractive optical element having two layers of diffraction gratings and alignment markings on each of the layers to align the two gratings.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

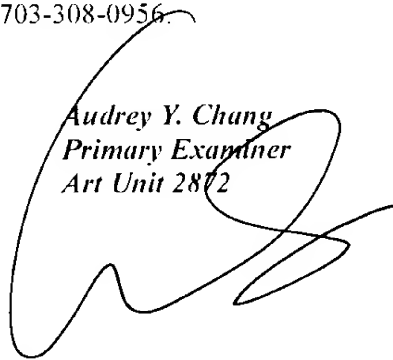
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Audrey Y. Chang*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.  
April 24, 2003